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ABSTRACT

This paper reviews literature on the effectiveness of reading-for-comprehension strategies at the primary (kindergarten through second grade) and intermediate (third through fifth grade) levels. The first section of the paper examines studies that seek to examine the distinctiveness hypothesis; the effectiveness of whole language instruction versus the direct instruction of reading skills (both phonemic awareness and comprehension); and hybrid approaches that combine elements of both. The second section of the paper focuses on the effectiveness of limiting the number of children in reading groups and the types of interaction among students in groups. The third section contains reviews of studies on metacognitive strategies. The fourth section reviews reading process strategies, including an examination of prereading, during reading and post reading strategies. The paper determines that (1) directed instruction of cooperative groups, metacognitive strategies, visualization, and repeated reading are effective strategies; and (2) the larger question of the effectiveness of whole language seems statistically unresolved. The paper concludes with criticism concerning the lack of economic definitions and suggestions for further research. Contains 25 references. (Author/RS)

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Research on the Effectiveness of Reading-for-Comprehension Strategies at the Primary and Intermediate Levels.

A Review of the Literature

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Abstract

This is a review of the literature on the effectiveness of reading-for-comprehension strategies at the primary (kindergarten through second grade) and intermediate (third through fifth grade) levels. The first heading is Whole Language and Directed Instruction. Studies that seek to examine the distinctiveness hypothesis, the effectiveness of whole language instruction versus the direct instruction of reading skills (both phonemic awareness and comprehension) as well as hybrid approaches that combine elements of both are reviewed here. The section labeled as Grouping Strategies focuses on the effectiveness of limiting the number of children in reading groups and the types of interaction between students in groups. The majority of the studies deal with cooperative learning. The third section contains reviews of studies on Metacognitive Strategies. Many of the studies examine different ways of structuring the instruction of metacognitive techniques. The fourth section reviews Reading Process Strategies. These include an examination of prereading, during reading and post reading strategies. Several of the reviewed strategies were found to be effective including directed instruction of cooperative groups, metacognitive strategies, visualization and repeated reading. The larger question of the effectiveness of whole language seems statistically unresolved. Criticism concerning the lack of economic definitions and suggestions for further research are included.

Teachers of primary (kindergarten through third grade) and intermediate (fourth grade through sixth grade) grades all over the United States use a variety of instructional strategies for teaching children reading comprehension. Given the broad and diverse theoretical background in reading instruction, one must acknowledge that theoretical support alone is not sufficient evidence to qualify a strategy as effective (Milligan and Berg, 1992) Only a thorough review of the literature can produce a list of strategies or approaches that have been proven to be effective under certain circumstances.

Such a list of strategies would be useful to teachers when they are making decisions on which instructional approaches to use and how to implement those approaches in the classroom. However, this review should not be used as a checklist for the classroom, denoting "effective" reading instruction as only those strategies listed as successful. It does not attempt to address the needs of students who have been diagnosed as Learning Disabled, nor does it attempt to control for the endless factors that might effect a child's ability to comprehend what he or she reads.

The review will be organized under the following headings: Whole Language and Directed Instruction, Grouping Strategies, Metacognitive Strategies and Reading Process Strategies.

Whole Language and Directed Instruction

Two theoretical approaches dominate the field of reading instruction today. The whole language and the directed instruction approaches are generally seen as the umbrella concepts under which many strategies fall. Reutzel & Hollingsworth (1991) analyzed the fundamental underpinnings of these two approaches by questioning what is called the distinctiveness hypothesis. The investigators define this hypothesis as a question "of whether or not there are discrete reading comprehension skills". The core question is if reading should be taught under a unitary approach (whole language) or a distinct skills (directed instruction) approach. Using a group of 61,

fourth graders and 53, sixth graders, the investigators used the Barnell Loft Test for Comprehension Skills to see if students who where directly instructed in discrete reading skills did better than students who just read in the library for a comparable amount of time. The investigator suggests that reading is a unitary process and that sustained reading is as effective as learning discrete reading skills. Taken by itself though, this study is certainly not definitive in its examination of the distinctiveness hypothesis.

Two studies expand out beyond the theoretical models of reading instruction to compare a whole language program with a word centered, directed instruction program. Milligan & Berg (1992) defined whole language as those classrooms that exhibit certain reading strategies, such as, Reading to Children, Shared Reading, Language Experience, Guided Reading and Independent Reading. The investigators measured the reading comprehension of four control (word centered) and four experimental (whole language) classes, using cloze paragraphs. While the investigators maintained that all children in the experimental group either outperformed or scored as well as the control group, the investigators chose those teachers who were willing to go through training in whole language techniques to teach the experimental groups. Teachers of the experimental classes might be more energetic teaching a reading program that is new and exciting.

The work of Richardson et al. (1991) examined these same two approaches in four, third grade classes using definitions similar to Milligan & Berg. The major difference in this study was that the teachers where surveyed to examine how they already taught in the classroom. Those classes whose teachers' styles already reflected mostly whole language or directed instruction approaches where chosen to be the experimental and control groups respectively. Neither group of teachers where either more or less interested in teacher training and received none. Richardson

found no significant difference in reading comprehension scores measured using cloze paragraph in the two groups.

Eldredge (1991) and Uhry & Shepherd (1993) both examined the modification of the whole language approach with direct instruction in phonetic awareness. Eldredge's control groups was a directed instruction classroom, while Uhry & Shepherd's control groups were whole language classrooms. Both studies measured comprehension with the Gates/MacGinite Reading Test (GMRT) , Eldredge used both the vocabulary and silent reading sections for a measure. Uhry & Shepherd used only the silent reading section to denote reading comprehension. This may account for Eldredge's results showing increased comprehension scores while Uhry & Shepherd found no difference between experimental and control groups.

Two other studies reveal fairly divergent results in the direct instruction area. Snider (1990) examined direct instruction of phonics to 66, first grade students of different ethnic origin over a year's instruction. As a marked difference from Eldredge and Uhry & Shepherd, Snider used the Iowa Test of Basic Skills to test reading comprehension, but like the former, used normal basal instruction as a control. Snider's results showed that while those students who received direct instruction in phonics did better on test for word analysis, there seemed to be no difference between control and experimental groups in comprehension.

Reutzel & Daines (1988) examined direct instruction of main ideas in the first grade setting. Unlike the previous studies, which examined the relationship of directed instruction of phonetic awareness and reading comprehension, they address the issue of direct instruction of a distinct reading skill. Their control group was a standard basal program with some directed instruction of skills, while their experimental group nad teacher training in methods of directed instruction and where taught with text based on the children's experiences. The investigators in this study measure comprehension as the ability of the first grade student to identify a word,

series of words or complete sentence that states the main idea of a section. They found that the experimental group consistently did better in choosing the main idea, though the use of experiential texts could have been a contributing factor.

Several studies seem to reach contradictory conclusions. Reutzel even seems to contradict himself in his 1988 and 1991 studies, citing directed instruction at first, then the whole language approach as more effective. More studies examining the effects of direct instruction of distinct comprehension skills should be done. From the current research, though, one can conclude that while reading seems to be a unitary process in relation to reading comprehension, there are certain areas of language arts that benefit from directed instruction.

Grouping Strategies

Grouping of students within a class or between classes is a common method for reading instruction. Several studies have examined the effectiveness of grouping on reading for comprehension test scores. Juel (1990) examined the variety of ways in which children where placed in groups. She studied how eight, first grade classroom teachers used objective criteria (Metropolitan Readiness Test or MRT scores and other testing scores) to group children within or between classes using two different basal reading series. While some teachers had two reading groups, others had three and still others "traded" students between classrooms during reading instruction to create more closely homogeneous groups. Juel concluded that placement and reading series had no effect on the success rate of students growth in reading as measured by MRT scores. Since all the groups were formed along homogeneous boundaries, the study is somewhat bias and does not seek to identify any differences between classes grouped along heterogeneous boundaries.

Morrow & Smith (1990) moved past grouping placement to the effect of reading group size on comprehension. Using 27 kindergarten and first graders as subjects, they examined how well students comprehended a story read to them in the whole

class (all 27 children), small group (3 students) and one to one setting. Morrow & Smith used both free recall and probed questioning after three readings of a story to measure students' comprehension of significant story parts. The investigators found that students in the small group setting scored significantly higher in both probed and free recall questioning than in the other two settings. They provided a good overview of the theoretical reasoning behind why they believe small groups were effective.

The previous study leads one to the next underlying question of what children do when they are in groups with adults or other students. Thomson (1992) examined the effects of a simple cooperative learning technique on reading comprehension over a 20 week application. The experimental group in Thomson's article was taught using whole class instruction, but each day students practiced vocabulary and story reading with partners. Both control and experimental groups used Cooperative Integrated Reading and Composition (CIRC) for reading comprehension materiels, but only the experimental group actually implemented the paired cooperative learning. Thomson indicated greater than expected reading scores as measured by SRA (Science Research Associates) Reading Achievement Test, of those students who participated in the experimental group, but not enough for statistical significance. She distinctly identifies the limited length of the study as an inhibitor of a more accurate analysis.

Since cooperative learning is a strategy used in conjunction with other approaches, Stevens, Slavin & Farnish (1991) attempted to analyze the strategy, disassembled from direct instruction. Their study included a control group taught by basal reading method and minimal directed instruction. The two treatment groups included a direct instruction group that modified the basal reader and and a group with the same modification, plus use of the above mentioned CIRC program. The investigators found, just as Thomson had, that both experimental groups produced better reading comprehension scores on a multiple choice test with main idea and inferencing questions, but that cooperative learning with direct instruction did not

produce a statistically significant additional effect. These two studies leave the question of cooperative learning statistically unresolved.

Finally, the question of the type and number of interactions within a cooperative group was studied to accurately gage the effectiveness of the cooperative grouping strategy. Meloth & Deering (1992) examined two separate variables of cooperative group interaction. 219, third grade students where split into two condition groups, both of which used cooperative grouping for four weeks. The first condition group was afforded daily and weekly group rewards for effective cooperative work along with individual and group grades. The second group had no reward system, but was directly instructed by their teacher in effective grouping strategies and in the use of "think sheets" to guide them through the experience. After coding group member's responses, the investigators contend that while both groups showed gains in comprehension as measured by the Subtest of Basic Skills the "strategy" group seemed to do better.

This coincides with the results of a study by Battistich, Solomon & Delucchi (1993) which adds to the strength of both. These investigators coded the work of cooperative groups for the number and quality of interactions; quality being defined as friendliness, helpfulness, collaborationism and concern for one another. They contend that not only is quality of group interaction important to increased reading comprehension as tested by the California Test of Basic Skills (CTBS), but that poor quality of interaction within cooperative groups can actually hinder reading comprehension increases.

Many investigators have noticed that differences in grouping strategies have a definite effect on reading comprehension. Investigators maintain that small groups of any construct are the most effective in reading instruction. Others feel that cooperative learning may have a long term positive effect on reading comprehension, but that is still statistically unresolved. The type of interaction within groups though seems to be

of paramount importance. Several investigators strongly contend that a guided, positive approach to cooperative reading groups shows an increase in reading scores on a variety of measures.

Metacognitive Strategies

Metacognition is defined as thinking about one's own thinking processes. Strategies that teach children how to examine their own cognitive processes are thought by some to enhance a child's ability to read well independently. Several quantitative studies have attempted to examine similar metacognitive strategies with varying results. Two sets of investigators examined the effects of structured metacognitive strategies in similar ways. Payne & Manning (1992) used a series of metacognitive strategies proposed by Schmitt & Baumann (1986) to enhance a basal reading program so as to produce better reading comprehension scores on the MAT. These series of strategies included prereading (prior knowledge, predictions, purpose for reading, questioning), guided reading (summarization, evaluation, relating information, questioning), and postreading (complete summarization, evaluation of predictions, goal analysis). Over a full year of instruction, Payne & Manning found that those fourth graders instructed in the metacognitive strategies scored significantly better on the MAT than the control group.

A similar study by Taylor & Frye (1992), used a less rigorous series of strategies (reciprocal teaching and summarization) for a shorter period of time (6 months) using a Social Studies text in fifth grade. These investigators found no difference between the reading comprehension scores (as measured by short answer questions) of the control and experimental groups. They mention that the next step would be to teach the process all year and fine tune the metacognitive strategies, both of which the Payne & Manning study did. An additional bias not mentioned in the study would be that the scoring of answers could have been done in a less than objective manner.

Hellekson & Feitler (1994) used another series of metacognitive strategies to enhance reading comprehension in low, first grade readers. The investigators examined the effects that a three part paraphrasing strategy (Teacher Modeling, Instructional Discussion and Active Listening) had on comprehension scores of the GMRT. After a two year study, they contend that those students who were trained in the program for half of each year had significantly higher gains on the test than the control group, and that those who were trained in it all year had slightly higher gains than the half year group. This study reenforces the work of the previous investigators. Although this study contains a somewhat different set of metacognitive strategies, the results are similar to the Payne & Manning study. The length of the study period gives further evidence to Taylor & Frye's results.

Another thinking skill studied was that of error analysis by Baker & Zimlin (1989). The investigators examined the direct instruction of either basic error analysis skills alone or basic and complex error analysis skills taken together. A control group using no direct instruction helped to reveal that those students who were instructed to recognize reading errors, were able to do so on reading comprehension tests. While students didn't perform spectacularly overall (only 54% accuracy), students were able to generalize error analysis by recognizing errors not directly instructed. They maintain that this would indicate that direct instruction of metacognitive strategies leads to a generalization of thinking skills and improved reading comprehension.

Many studies seem to indicate that metacognition is an effective strategy to improve reading comprehension. Like studies on cooperative learning though, several investigators show that the strategies used to teach students to examine how they read must be structured to produce effective results. Further analysis into what types of strategic metacognitive instruction would be useful, to show that there is a positive effect on independent reading.

Reading Process Strategies

This last section contains a series of strategies dealing with the reading process. These strategies are sequenced to reflect the order they might take place in instruction i.e. prereading, during reading and post-reading.

Dole et al. (1991) review the two types of prereading instruction that are commonly used to prepare students to read a selection. The first is a teacher-directed approach in which the instructor presents relevant information necessary to understand the upcoming text. The second is an interactive approach which invites students to discuss their prior knowledge about the topic of the upcoming text. Along with a control group that had no prereading instruction, they investigated how these pre-writing treatments effected reading comprehension. In their review of the literature, they mention that both the teacher-directed and the interactive approaches have sound theoretical underpinnings. Using a series of story maps with rubrics to measure comprehension, the investigators provided evidence that the teacher-directed approach was substantially more effective in raising comprehension scores than either the control or the interactive approaches. Since the subject of this study where fifth graders though, these approaches may only reflect the needs of students at the intermediate level and may not be indicative of results in primary grades.

Anderson et al. (1990) investigated the effects of emphasizing global understanding versus language and phonetic features. Two groups make up of 149, third grade students went through two lessons where one group focused on meaning, defined by a series of prediction questions, while the other group concentrated on surface elements, defined by a series of work analysis activities with a concentration on accurate decoding. They contend that not only did students in the meaning-emphasis group do significantly better on reading comprehension as measured by an SRA Achievement Series, but that they also erred less in decoding than the surface-emphasis group. Given these results though, the investigators do admit that the

surface-emphasis instructional technique is not representative of ordinary classroom instruction.

Several studies investigated how imagery in its written, visual and dramatic forms effected reading comprehension. Baumann & Bergeron (1993) examined a group of children instructed in story mapping along with a control group, a Directed Reading/Thinking Activity group and a group that used its story maps to create compositions. The investigators scored reading comprehension on a 0-4 point scale by a student's ability to identify from a series of sentences, the correct story elements. They related that students in the story mapping group consistently outperformed all other groups, and that using the story maps to create a composition after reading did not create a statistical increase in reading comprehension. Gambrell & Jawitz (1993) examined mental imagery and analysis of text illustrations to identify how these visualization strategies effected reading comprehension. Using similar scoring methods as Baumann & Bergeron to measure comprehension, they identified a combination of visualization and illustration analysis techniques as most effective in increasing reading comprehension. In Dupont's (1992) study on the effect of creative drama on reading comprehension, she found similar results that seem related to visualization. Dupont maintains that those students who acted out (and thus visualized) children's literature for six weeks, outperformed those students in a control group on the MAT. These three studies (Baumann & Bergeron, Gambrell & Jawitz and Dupont) taken together provide strong, multifaceted evidence on the positive effects of visualization on reading comprehension.

Guided reading, summarization and repeated reading round out the process strategies analyzed for their effects on reading comprehension. O'Mallan et al. (1993) used a guided reading strategy in which students initially read a chapter of a science text, related their knowledge to their teacher, who then modeled appropriate organizational techniques. Using the end of the chapter questions as a reading

comprehension test, the investigators witnessed a smaller increase in the experimental groups scores compared to a control group after the first independent chapter, but a dramatic increase after an additional chapter. They maintain that this drop, then increase in scores leads one to believe that extended testing (this study was only over 5 days) would most likely show a compounding positive effect from the guided reading technique.

Training in summarization is the strategy that Rinehart & Others (1986) examined to detect any effects it might have on reading comprehension. Using directed instruction of summarization, including modeling, practicing with feedback and gradual release, the investigators used the GMRT to identify changes in reading comprehension. They showed that training in summarization did seem to have a positive effect on reading for major story elements by no effect on identification of minor facts. They reasonably contend that the summarization procedures help students to focus on those things which are most important from a story, thus the increase in the major components of reading comprehension.

Finally, Stoddard & Others (1993) identified repeated reading of a text as a strategy that might increase comprehension. 30, fourth and fifth grade students read passages one, three or seven times. They show that a significant increase in reading comprehension scores as measured by the Barnell Loft Skills Reading Test was found when students repeated their reading three times. They also contend that compared to a single reading, students who read a passage seven times showed an increase in comprehension, but there was no statistical difference between three and seven readings. The investigators discussed that the simplicity and promise of this procedure merits strong consideration by classroom teachers.

Many studies show that while visualization seems to be the most promising of the process strategies, an underlying focus of all these strategies leads one back to the original discussion of directed instruction. Several of the investigators include in

their treatment, direct instruction in prereading, mapping, summarizing and guided reading. Taken with the studies presented in the first section of this review, these investigators seem to provide further evidence of the success of direct instruction in increasing reading comprehension scores in some cases.

Summary and Conclusion

Of the many strategies reviewed here several were found to be effective in increasing reading comprehension. Direct instruction in cooperative groups and metacognitive strategies, visualization and repeated reading were among the most successful in raising comprehension test scores. Only one (non-directed cooperative learning) was found to be a determent to reading comprehension. While the larger question of the effectiveness of whole language seems statistically unresolved, there does yet seem to be theoretical evidence that directed instruction in distinct reading skills might not be the most effective approach in raising independent reading scores.

A lack of definitions for the economic status of subjects was noticeable in all of the reviewed studies. While every study mentioned a general economic class standing for the communities in which the subjects lived, no study defined such phrases as "working" or "middle" class with economic statistics. Since economic variables might cause variances in prior knowledge or other factors that effect reading comprehension,.it would seem logical to provide economic markers that would relate the range of family incomes or types of jobs held by the heads of household.

Further study into the whole language strategies might be useful in defining if any "parts" of the whole language approach are better at raising reading comprehension than others. It may be that such a unitary approach can't be divided for analysis. More research into hybrid approaches could further enhance the instruction of those teachers using an eclectic approach to reading instruction. This would further the goal that all teachers have of providing useful and relevant reading instruction that is based in a sound theoretical rationale.

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